

CLAIMS:

We claim:

1. A method for communicating between a first device and a second device, the method comprising:

5 automatically negotiating an exchange rate for the exchange of communications between the first device and the second device;

responsive to negotiating the exchange rate, establishing a connection between the first device and the second device; and

10 responsive to establishing the connection, exchanging communications between the first device and the second device over the connection at the negotiated exchange rate.

2. The method of claim 1 wherein the step of automatically negotiating the exchange rate comprises:

15 in the first device, providing a first synchronization request message to the second device, wherein the first synchronization message includes a first exchange rate; and

20 in the second device, processing the first synchronization request message to provide a first synchronization acknowledgement message to the first device, wherein the first synchronization acknowledgement message includes one of the first exchange rate and a second exchange rate and wherein the one of the first exchange rate and the second exchange rate returned in the first synchronization acknowledgement message is the negotiated exchange rate.

3 The method of claim 2 the method comprising:

in the first device, providing the first synchronization request message to the second device, wherein the first synchronization message includes a plurality of exchange rates; and

5 in the second device, processing the first synchronization request message to provide the first synchronization acknowledgement message to the first device, wherein the first synchronization acknowledgement message includes one of the plurality of exchange rates and wherein the one of the plurality of exchange rates returned in the first synchronization acknowledgement message is the negotiated exchange rate.

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4 The method of claim 3 the method comprising

in the first device, automatically adjusting the first device exchange rate to the negotiated exchange rate; and

15 in the second device, automatically adjusting the second device exchange rate to the negotiated exchange rate.

5. The method of claim 4 the method comprising:

testing the connection between the first device and the second device at the negotiated exchange rate.

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6. The method of claim 5 the method comprising:

in the first device, receiving a suggested exchange rate from an application program;

25 automatically renegotiating the exchange rate between the first device and the second device the to the suggested exchange rate;

exchanging communications between the first device and the second device over the connection at the suggested exchange rate.

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7. The method of claim 6 wherein the step of automatically renegotiating the exchange rate comprises:

in the first device providing a second synchronization request message to the second device that includes the suggested exchange rate; and

5 in the second device, processing the second synchronization request message to provide a second synchronization acknowledgement message to the first device, wherein the second synchronization acknowledgement message includes the suggested exchange rate.

10 8. The method of claim 7 the method comprising:

in the first device, automatically adjusting the first device exchange rate to the suggested exchange rate; and

in the second device, automatically adjusting the second device exchange rate to the suggested exchange rate.

15 9. The method of claim 8 the method comprising:

testing the connection between the first device and the second device at the suggested exchange rate.

20 10. The method of claim 9 wherein the suggested exchange rate is the highest common exchange rate between the first device and the second device.

11. The method of claim 9 wherein the step of testing the connection comprises:

25 exchanging full duplex test messages and test acknowledgment messages between the first device and the second device at the suggested exchange rate.

12. The method of claim 9 the method comprising:

responsive to an error during testing, automatically renegotiating the exchange rate between the first device and the second device to a lower exchange rate; and

30 exchanging the communications between the first device and the second device at the lower exchange rate.

13. The method of claim 1 wherein the step of exchanging the communications between the first device and the second device comprises:

in the first device, providing an information message to the second device that includes the communications; and

in the second device, processing the information message to provide a supervisory response message to the first device.

14. The method of claim 13 the method comprising:

wherein the supervisory response message indicates a validation of the information message condition.

15. The method of claim 13 the method comprising:

wherein the supervisory response message indicates an error in the information message condition.

16. The method of claim 13 the method comprising:

wherein the supervisory response message indicates the validation of the information message condition and a receiver not ready condition.

17. The method of claim 1 wherein the communications are packetized communications.

18. The method of claim 1 wherein the communications are serial communications between the first device and the second device.

19. A Software product comprising:

processing system instructions operational when executed on a processor to automatically negotiate an exchange rate for the exchange of communications between a first device and a second device, establish a connection between the first device and the second device, and exchange the communications between the first device and the second device over the connection at the negotiated exchange rate; and

a storage medium operational to store the processing system instructions.

20. The product of claim 19 wherein the processing system instructions comprise:

first device instructions operational when executed on a first device processor to provide a first synchronization request message to the second device, wherein the first synchronization message includes a first exchange rate;

second device instructions operational when executed on a second device processor to process the first synchronization request message and provide a first synchronization acknowledgement message to the first device, wherein the first synchronization acknowledgement message includes one of the first exchange rate and a second exchange rate and wherein the one of the first exchange rate and the second exchange rate returned in the first synchronization acknowledgement message is the negotiated exchange rate.

21 The product of claim 20 wherein the first device instructions are operational to provide the first synchronization request message to the second device, wherein the first synchronization message includes a plurality of exchange rates; and

the second device instructions are operational to process the first synchronization request message to provide the first synchronization acknowledgement message to the first device, wherein the first synchronization acknowledgement message includes one of the plurality of exchange rates and wherein the one of the plurality of exchange rates returned in the first synchronization acknowledgement message is the negotiated exchange rate.

22. The product of claim 21 wherein the first device instructions are operational to automatically adjust the first device exchange rate to the negotiated exchange rate, and the second device instructions are operational to automatically adjust the second device exchange rate to the negotiated exchange rate.

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23. The product of claim 22 wherein the processing system instructions are operational to test the connection between the first device and the second device at the negotiated exchange rate.

10 24. The product of claim 23 wherein the processing system instructions are operational to receive a suggested exchange rate from an application program, automatically renegotiate the exchange rate between the first device and the second device to the suggested exchange rate, and exchange communications between the first device and the second device over the connection at the suggested exchange rate.

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25. The product of claim 24 wherein the first device instructions are operational to provide a second synchronization request message to the second device that includes the suggested exchange rate and the second device instructions are operational to process the second synchronization request message to provide a second synchronization acknowledgement message to the first device, wherein the second synchronization acknowledgement message includes the suggested exchange rate.

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26. The product of claim 25 wherein the first device instructions are operational to automatically adjust the first device exchange rate to the suggested exchange rate and the second device instructions are operational to automatically adjust the second device exchange rate to the suggested exchange rate.

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27. The method of claim 26 wherein the processing system instructions are operational to test the connection between the first device and the second device at the suggested exchange rate.

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28. The product of claim 27 wherein the suggested exchange rate is the highest common exchange rate between the first device and the second device.

29. The product of claim 27 wherein first device instructions and the second device instructions are operational to exchange full duplex test messages and test acknowledgment messages between the first device and the second device at the suggested exchange rate.

30. The product of claim 27 wherein the first device instructions and the second device instructions are operational to automatically renegotiate the exchange rate between the first device and the second device to a lower exchange rate responsive to an error during the exchange of the test messages and exchange the communications between the first device and the second device at the lower exchange rate.

31. The product of claim 19 wherein the first device instructions are operational to provide an information message to the second device that includes the communications and the second device instructions are operational to process the information message to provide a supervisory response message to the first device.

32. The product of claim 31 wherein the supervisory response message indicates a validation of the information message condition.

33. The product of claim 31 wherein the supervisory response message indicates an error in the information message condition.

34. The product of claim 31 wherein the supervisory response message indicates the validation of the information message condition and a receiver not ready condition.

35. The product of claim 19 wherein the communications are packetized communications.

36. The product of claim 19 wherein the communications are serial communications between the first device and the second device.

37. A point-to-point protocol comprising:

5 a synchronization request message, wherein the synchronization request message comprises at least one exchange rate for the exchange of communications between a first device and a second device; and

10 a synchronization acknowledgment message, wherein the synchronization acknowledgment message comprises one of the at least one exchange rate and a lower exchange rate.

38. The protocol of claim 37 the protocol comprising:

15 a data acknowledgment message that includes an indication for a first application program that confirms information sent to a second application program by the first application program was delivered to the second application program.

39. The protocol of claim 37 wherein the synchronization request message comprises a plurality of exchange rates and wherein the synchronization acknowledgment message comprises one of the plurality of exchange rates.

20 40. A protocol message comprising:

a message identification field;

a message length field; and

25 a data field, wherein the data field includes at least one exchange rate for the exchange of communications between a first device and a second device.

41. The protocol message of claim 35 wherein the data field includes a plurality of exchange rates supported by the first device.